$$\frac{\partial \theta}{\partial t} = K \frac{\partial^2 \theta}{\partial x^2}$$

$$\frac{\theta_i^{n+1} - \theta_i^{n}}{\Delta \tau} = \frac{K}{h^2}\left(\theta_{i-1}^{n+1} - 2\theta_i^{n+1} + \theta_{i+1}^{n+1}\right)$$

$$\alpha = \frac{K \cdot \Delta \tau}{h^2}$$

$$-\alpha \theta_{i-1}^{n+1} + (1+2\alpha)\theta_i^{n+1} - \alpha \theta_{i+1}^{n+1} = \theta_i^{n}$$

$$i \in \{1, .., N\}$$

$$\theta_1 = \theta_A \qquad \theta_N = \theta_B$$

$$\theta^0 = \theta_C$$

$$-\alpha\theta_1^{n+1} + (1+2\alpha)\theta_2^{n+1} - \alpha\theta_3^{n+1} = \theta_2^{n}$$

$$-\alpha\theta_2^{n+1} + (1+2\alpha)\theta_3^{n+1} - \alpha\theta_4^{n+1} = \theta_3^{n}$$

$$-\alpha\theta_{N-2}^{n+1} + (1+2\alpha)\theta_{N-1}^{n+1} - \alpha\theta_N^{n+1} = \theta_{N-1}^{n+1}$$

$$\begin{bmatrix} 1+2\alpha & -\alpha & & & \\ -\alpha & 1+2\alpha & -\alpha & & \\ & & \ddots & & \\ & -\alpha & 1+2\alpha & -\alpha & \\ & & -\alpha & 1+2\alpha & \end{bmatrix} \begin{bmatrix} \theta_2^{n+1} \\ \vdots \\ \theta_{N-1}^{n+1} \end{bmatrix} = \begin{bmatrix} \theta_2^{n} + \alpha\theta_A \\ \theta_3^{n} \\ \vdots \\ \theta_{N-1}^{n+1} + \alpha\theta_B \end{bmatrix}$$

$$\begin{bmatrix} -\alpha & 1+2\alpha & -\alpha \end{bmatrix} \begin{bmatrix} \theta_k^{n+1} \end{bmatrix} = \begin{bmatrix} f_i \end{bmatrix}$$